Volunteer Lake Assessment Program Individual Lake Reports

WINNISQUAM, LACONIA, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	291,649	**Max. Depth (m):**	53	**Flushing Rate (yr^{1})**	2.2
Surface Area (Ac.):	4264	**Mean Depth (m):**	15.2	**P Retention Coef:**	
Shore Length (m):	45,400	**Volume (m^{3}):**	262,306,500	**Elevation (ft):**	482

TROPHIC CLASSIFICATION

Year	Trophic class
1984	OLIGOTROPHIC
1994	OLIGOTROPHIC

KNOWN EXOTIC SPECIES

Variable Milfoil

The Waterbody Report Card tables are generated from the 2012 305(b) report on the status of N.H. waters, and are based on data collected from 2001-2011.

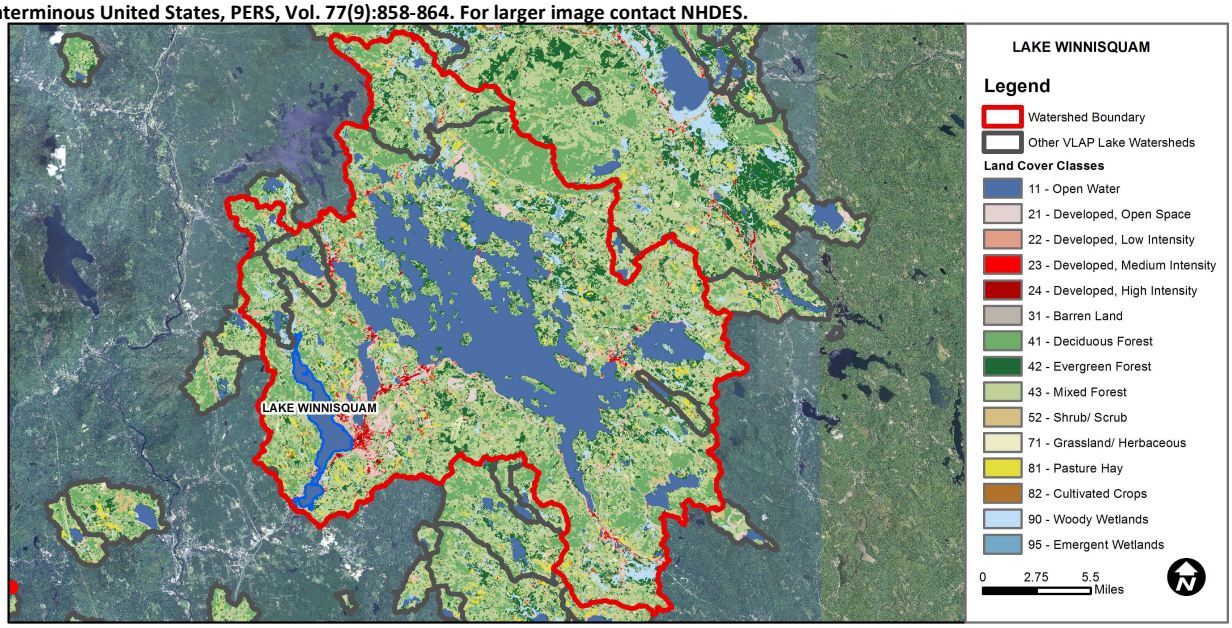
Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Cautionary	<5 samples and median is > threshold. More data needed.
	pH	Slightly Bad	>10% of samples exceed criteria by a small margin (minimum of 2 exceedances).
	D.O. (mg/L)	Very Good	At least 10 samples with 0 exceedances of criteria.
	D.O. (% sat)	Very Good	At least 10 samples with 0 exceedances of criteria.
	Chlorophyll-a	Good	>/=5 samples and median is < threshold but > 1/2 threshold value.
Primary Contact Recreation	E. coli	Very Good	All bacteria samples <75% of geometric mean criteria, but not enough to calculate geometric mean. Or, all bacteria samples are < single sample criteria and calculated Geometric means are less than geometric mean criteria.
	Cyanobacteria	Slightly Bad	Cyanobacteria bloom(s).
	Chlorophyll-a	Very Good	At least 10 samples with 0 exceedances of criteria.

BEACH PRIMARY CONTACT ASSESSMENT STATUS

LAKE WINNISQUAM - AHERN STATE PARK	E. coli	Bad	>/=1 exceedance(s) of geometric mean criterion and/or >/=2 exceedances of single sample criterion, with 1 or more >2X criteria.
LAKE WINNISQUAM - BELMONT TOWN BEACH	E. coli	Good	Geometric means < criteria; however at least 1 exceedance of the single sample criteria occurred.
LAKE WINNISQUAM - BELMONT TOWN BEACH	Cyanobacteria	Slightly Bad	Cyanobacteria bloom(s).
LAKE WINNISQUAM - BARTLETTS BEACH	E. coli	Bad	>/=1 exceedance(s) of geometric mean criterion and/or >/=2 exceedances of single sample criterion, with 1 or more >2X criteria.
LAKE WINNISQUAM - BARTLETTS BEACH	Cyanobacteria	Slightly Bad	Cyanobacteria bloom(s).
LAKE WINNISQUAM - SANBORNTON TOWN BEACH	Cyanobacteria	Slightly Bad	Cyanobacteria bloom(s).
LAKE WINNISQUAM - SANBORNTON TOWN BEACH	E. coli	Bad	>/=1 exceedance(s) of geometric mean criterion and/or >/=2 exceedances of single sample criterion, with 1 or more >2X criteria.

WATERSHED LAND USE SUMMARY

Fry, J., Xian, G., Jin, S., Dewitz, J., Homer, C., Yang, L., Barnes, C., Herold, N., and Wickham, J., 2011. Completion of the 2006 National Land Cover Database for the Conterminous United States, PERS, Vol. 77(9):858-864. For larger image contact NHDES.



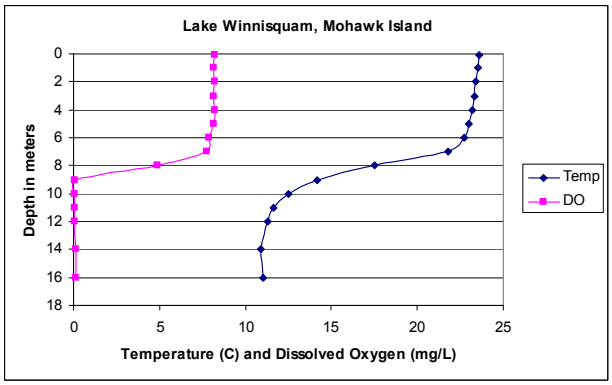
Land Cover Category	% Cover	Land Cover Category	% Cover	Land Cover Category	% Cover
Open Water	21.4	Barren Land	0.11	Grassland/Herbaceous	0.51
Developed-Open Space	4.8	Deciduous Forest	17.08	Pasture Hay	1.83
Developed-Low Intensity	1.65	Evergreen Forest	11.12	Cultivated Crops	0.52
Developed-Medium Intensity	0.7	Mixed Forest	32.34	Woody Wetlands	3.2
Developed-High Intensity	0.23	Shrub-Scrub	2.67	Emergent Wetlands	0.57

VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS
LAKE WINNISQUAM, MOHAWK ISLAND, BELMONT, NH
2012 DATA SUMMARY

OBSERVATIONS AND RECOMMENDATIONS (*Refer to Table 1 and Historical Deep Spot Data Graphic)*

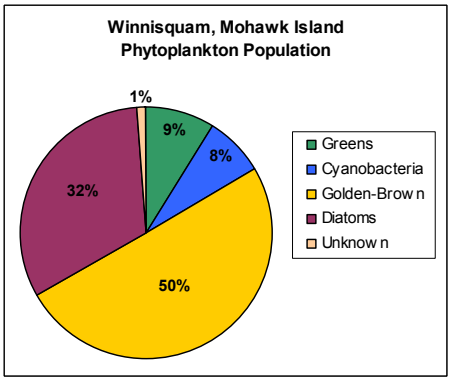
- **CHLOROPHYLL-A:** The 2012 chlorophyll level was low and well below the NH lake median value.
- **CONDUCTIVITY/CHLORIDE:** Conductivity and chloride were slightly elevated likely due to road salting practices.
- **TOTAL PHOSPHORUS:** Epilimnetic (upper water layer) and metalimnetic (middle water layer) phosphorus were low and epilimnetic phosphorus was below the NH lake median. Hypolimnetic (lower water layer) phosphorus was elevated due to phosphorus release from sediments under conditions of oxygen depletion.
- **TRANSPARENCY:** Transparency was lower than 2010 levels, however greater than the NH lake median.
- **TURBIDITY:** Hypolimnetic turbidity was slightly elevated likely due to bottom sediment and/or accumulation of organic compounds during oxygen depletion.
- **PH:** pH tends to fluctuate below desirable levels.
- **RECOMMENDED ACTIONS:** Increase monitoring frequency to three times per summer to better assess summer water quality and historical trends.

Dissolved Oxygen & Temperature Profile



Station Name	Alk. mg/l	Chlor-a ug/l	Chloride mg/l	Cond. uS/cm	Total P ug/l	Trans. m NVS	Trans. m VS	Turb. ntu	pH
Epilimnion	5.60	2.43	15	91.8	6	5.43	5.75	0.51	7.01
Metalimnion				96.3	13			1.21	6.57
Hypolimnion				112.9	83			2.14	6.50

Table 1. 2012 Average Water Quality Data for LAKE WINNISQUAM, MOHAWK ISLAND

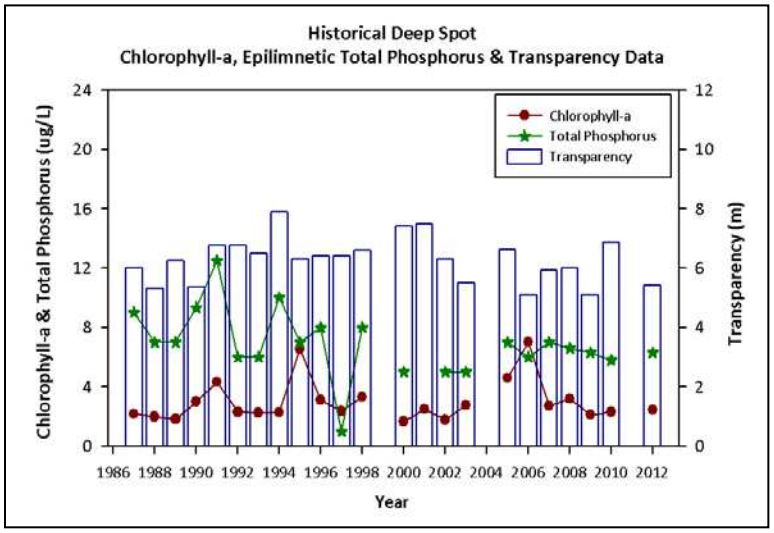


NH Median Values: Median values for specific parameters generated from historic lake monitoring data.
Alkalinity: 4.9 mg/L
Chlorophyll-a: 4.58 mg/m^3
Conductivity: 40.0 uS/cm
Chloride: 4 mg/L
Total Phosphorus: 12 ug/L
Transparency: 3.2 m
pH: 6.6

NH Water Quality Standards: Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.
Chloride: < 230 mg/L (chronic)
E. coli: > 88 cts/100 mL – public beach
E. coli: > 406 cts/100 mL – surface waters
Turbidity: > 10 NTU above natural level
pH: 6.5-8.0 (unless naturally occurring)

HISTORICAL WATER QUALITY TREND ANALYSIS

Parameter	Trend	Explanation
Chlorophyll-a	N/A	Ten consecutive years of data necessary for trend analysis.
Transparency	N/A	Ten consecutive years of data necessary for trend analysis.
Phosphorus (epilimnion)	N/A	Ten consecutive years of data necessary for trend analysis.



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